

From
PAPER *to* PAPERS

EUGENE G. FOSTER

FROM PAPER TO PAPERS



*How the titanic task of
producing over 800,000
Tribunes every night
is accomplished*

THE WORLD'S GREATEST NEWSPAPER

FOR hundreds of thousands of families few events are more important than the daily appearance of the Chicago Tribune. Unfailingly each day it brings them the news of the world. Reading the Tribune is as inevitable a part of their day as the weather.

Because its appearance is so unfailing, few readers realize what a spectacular accomplishment the production of the Tribune represents. News pours in from everywhere; it must be edited, summarized in headlines and illustrated. Editorials have to be written, cartoons drawn. Comic strips and other features must be prepared. All these, together with a great volume of advertising, must be ready for the presses within the ironclad time limits allowed for the mechanical transmutation of this vast assembly of words and pictures into Tribunes.

Published by the Chicago Tribune

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To perform this tremendous job day after day, smoothly and accurately, calls for highly efficient organization. It calls for the ability to weld into a perfectly functioning whole, activities as diverse as the writing of a headline and the casting of a stereotype. And it calls for mechanical skill and equipment bordering on the uncanny.

In all its eighty-nine years the Tribune has been a well-printed newspaper. Its typography and make-up have always been the best that the finest obtainable equipment and materials could produce. As inventiveness, its own and others', developed better methods of production, the Tribune was among the first, and frequently the first, to adopt them. The Tribune was among the first American newspapers to use rotogravure printing. Color rotogravure printing is its own invention. It was a pioneer in the development of newsprint color printing.

The depression has not stayed this policy of constant improvement. The years since 1930 have seen extensive and costly mechanical changes. The entire press equipment is in process of replacement by newer,

speedier machines. This change alone represents an outlay of more than \$1,250,000. Improved equipment has been installed in the engraving and stereotype departments. The paper warehouse has been doubled in size. New unloading cranes have been built and two new vessels added to the Tribune's fleet of paper carrying ships. Hundreds of thousands of dollars have been expended at the Tribune paper mill to produce better newsprint.

In your trip through the Tribune plant you have seen something of the wonder of a great accomplishment. So that you may have a record of what you saw, and of some activities you could not see, this little book is presented to you with the compliments of the

Chicago Tribune
THE WORLD'S GREATEST NEWSPAPER



EIGHTY-NINE YEARS OF PROGRESS

ON June 10, 1847, the Chicago Tribune made its first appearance. The first edition of four hundred copies was printed on a small hand press by one of the editors in a single room in a building at Lake and La Salle Streets.

In the nearly ninety years since that time the Tribune has seen and reported four American wars—the Mexican, the Civil, the Spanish-American, and the World War. It has brought to its readers the results of 23 presidential elections. Fire destroyed its plants in 1849 and 1871. It has lived through eight major depressions.

As Chicago has grown so has the Tribune. The small room where the first four-page issue was printed has given way to Tribune Tower, the world's most beautiful commercial building. The physical size of the paper has grown from four pages to many multiples of that number. The present organization numbers over 5,000 men and women and covers the globe in its quest for news. Tribune newsprint is the prod-

uct of Tribune forests and mills. The triumphs of modern science are constantly utilized to make it a better newspaper.

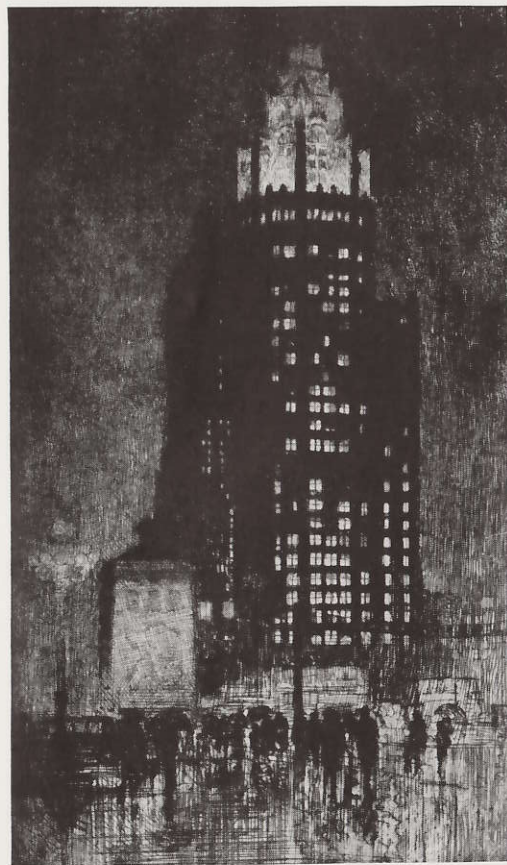
Judged by the standards of quantity and character of circulation, advertising lineage and effectiveness, variety and quality of news, editorial prestige, mechanical equipment and scope of operations—the Chicago Tribune is supreme among newspapers.

THE NEWS ROOM

NEWS is by far the most important commodity a newspaper has to offer. To gather it from all over the world the Tribune has devoted years of effort and spent hundreds of thousands of dollars building up an adequate system.

All news, whether it comes from Chicago's Loop or from far away China, pours into the news room, the nerve center of the newspaper. Here it is prepared and assembled to be set in type in the composing room. The news that comes in may generally be divided into three divisions—Local, Domestic and Foreign. Each of these branches is in charge of an editor assisted by a staff of copy readers. After the news stories are written, corrected and given headlines, they are turned over to the Managing Editor, the News Editor or the Night Editor for inclusion in their proper place in the paper.

Eight



TRIBUNE TOWER BY NIGHT

Serene and lovely, the great Gothic tower gives no hint of roaring presses turning miles of paper into millions of Tribunes.

Nine

LOCAL NEWS

THIS is the news of the city, the everyday happenings of which most of us know only through the medium of the newspaper. There are a number of sources of Local News. One of the most important of these is the City News Bureau, a newsgathering organization maintained jointly by the daily papers of the city. The Bureau has its reporters stationed all over Chicago and suburbs. They phone their stories in to the Bureau, giving briefly and accurately every possible fact. Stencil copies are then made and shot by pneumatic tube to every newspaper office. The Tribune uses three and a quarter miles of these pneumatic tubes. They run from the former Tribune building, at Madison and Dearborn Streets, to the Associated Press and the City Press Bureau offices, thence to the plant. They are operated by electrically driven, forty horsepower air compressors and make the round trip of this circuit in five minutes. In the Tribune office Press Bureau stories are judged by the city editor as to their news value. If important enough, a Tribune reporter or a squad of them may be sent out to get more complete information.

Of the Tribune's own staf of reporters, some have regular "beats"—the City Hall, the County Building, the Board of Education, the Federal Building, etc. Other reporters

are sent out each day on special assignments. At night men are stationed at strategically located police stations on each side of the city, ready at all times to rush out and cover any happening that might break in that neighborhood.

Some one is at the city desk in the News Room each minute of the twenty-four hours every day, ready to receive news and, if necessary, to concentrate the entire resources of the Tribune on covering it.

Associated with the local staf are various editors who cover particular fields of news requiring specialized attention. Financial news, religious news, society news, sports news, grain and live stock news, dramatic, music and radio news, etc., are written by men and women recognized as experts in their particular fields. The names of Tribune special writers are household words in hundreds of thousands of homes in Chicago and suburbs throughout the central states.

DOMESTIC NEWS

NEWs of the nation comes to Tribune Tower from the Associated Press, the United Press, Chicago Tribune Press Service, the Tribune's own news bureaus in New York, Washington and Los Angeles, and from hundreds of correspondents in cities and towns all over the United States.

The Associated Press and the United Press are world-wide organizations for gathering news and distributing it to newspapers. The Tribune uses both these services to insure getting all the news of the world at the earliest possible moment.

The Tribune's Washington Bureau covers national politics, governmental and diplomatic affairs. The Washington staf is responsible for the high character of the Tribune's national political news, for which the paper has always been famous.

Hundreds of other Tribune correspondents are located all over the country. These are independent men, generally staf-men on local newspapers. They offer stories of important news happenings in their own localities and are paid fixed rates per column on all stories accepted by the Tribune.

Tribune Domestic News comes in over the telegraph wires located in the rooms along the north side of the News Room. In the first are the Western Union operators and correspondents for newspapers scattered from New York to Los Angeles. In the middle room is the Tribune News Bureau which uses every day more than 20,000 miles of leased wire, including the longest regularly leased wire in the world, terminating in San Francisco, in sending Tribune news stories to other newspapers. Here, too, are the Tribune's receiving

Twelve

wires from Washington and New York. The third room contains the wires of the Postal Telegraph Company.

News stories constantly pour in over these wires. They are read and classified by a corps of copy readers under the direction of the Telegraph Editor, who selects which of them are to be used in the next morning's paper. These stories are then sent to the composing room, usually by way of the desk of the Managing Editor.

FOREIGN NEWS

By far the most important sources of foreign news are the Tribune's own correspondents, all of whom are American born and trained. Their headquarters are in leading news centers all over the world. When a big story breaks these men are prepared to rush instantly by trains, automobiles, and airplanes, to the point where things are happening. Their adventures are many. They spare no efforts to get the news for Tribune readers.

The reports of these correspondents are written in a drastically abbreviated form known as "Cablese," mere skeletons of the stories as they appear in print. They are turned into everyday language by the copy readers. When this has been done, they are passed on to the Cable Editor for inclusion in the Tribune. Other foreign news also comes in from the

Thirteen

Associated Press and the United Press, and the paper also has access, through interchange of facilities, to the cables of the New York Times.

THE MORGUE

THE reference room, or morgue, so called because it contains material for countless obituaries, adjoins the news room. Here are filed stories and pictures of everybody, notable and obscure, who for one reason or another has been in the news during the last thirty years.

More than thirty-five million clippings and over three million photographs are available. There are also envelopes full of material concerning organizations, historical events, countries, cities, etc.—all information to which a newspaper must have immediate access.

PHOTOGRAPH DEPARTMENT

THE Tribune has a large staff of cameramen. At all hours of the day or night some of these men are on duty to meet any emergency that may arise. Each year the worldwide Acme-News pictures, Inc., supplies the Tribune with approximately two million news pictures. The Tribune is the only Chicago morning newspaper subscribing to the Associated Press "Wirephoto" service. By this method, photographs of remarkable clarity are received by wire a few minutes after they have been taken.

Speed is vitally important. A plate can be developed in four or five minutes, and in two minutes more a finished print reaches the editor's desk. A picture taken in Chicago's Loop can be published in the Tribune and delivered to downtown newsstands in less than an hour.

THE ENGRAVING ROOM

ON the same floor as the news room is the engraving room. Here all photographs and drawings used in the Tribune are reproduced in metal so that they can be printed. This process is simple, but a high degree of skill and care is necessary, as the work is done under pressure of time.

Reproductions made from photographs are called half-tones. Those made from drawings are known as zincs or line engravings.

In making a half-tone, the first step is to reproduce the picture by photography. The picture from which a half-tone is to be made is tacked upon a board opposite the lens of the engraving room camera. A negative is made in much the usual way except that a screen is placed in the camera in front of the plate.

Without this screen, halftone negative reproduction would be impossible. The screen is made of glass plates across which parallel furrows, 65 or 75 to the inch, filled with an opaque pigment, are cut. Two of these plates with their lines at right angles are sealed to-



PHOTOGRAPHING PHOTOGRAPHS

In the blue glare of mercury lights the first step of transforming photographs and drawings into metal engravings is accomplished.

Sixteen

gether, the lines thus forming a cross hatching like a fly screen.

When the negative is developed, it is treated with several separate chemical solutions. This brings out the image and sharpens the contrasts. Strengthened with transparent rubber cement and collodion, the negative is dried and cut to size. It is then placed in a bath of acetic acid which frees the film from the glass plate. The film is then transferred to another piece of glass and is ready for photographic printing.

For black and white printing, a zinc plate is sensitized with a solution of albumen and bichromate of ammonia. The negative is placed in a printing frame with the metal plate pressed closely to it and subjected to a strong light. This reproduces the photograph on the plate. The plate is then rolled with etching ink and the picture is brought out by washing with water.

When it goes to the etchers the plate contains the dots left by the screen and the intervening white spaces. The spaces are removed and the dots preserved. This is done by protecting the dots with a special preparation and placing the plate in nitric acid which eats out the unprotected spaces. Plates used for newsprint color printing are made of copper. They are etched in a special machine which uses a solution of chloride of iron.

Seventeen



LINOTYPE ALLEY

*While the city sleeps. . . . row upon row of
linotypes clatter and click setting the type
that will tell the world what the world is doing!
And these are only a few of the seventy-two lino-
types in the Tribune plant!*

Eighteen

Line engravings are made in the same manner excepting that a half-tone screen is not used. After being cleaned with lye, the engravings are sent to the routers, who, using a special machine, cut away the excess metal from the plates. They are then mounted on a metal base, trimmed and sent to the composing room to take their proper places in Tribune pages.

COMPOSING ROOM

AROUND 3:30 p. m. news stories begin to come to the composing room from the night editor in various conditions and varying volume. These go at once to the copycutter's desk, who cuts the text of each story into convenient lengths, called "takes." Each of these is marked for convenience in reassembling the copy and type after it is set.

A battery of seventy-two linotype machines is used to set the type for Tribune news stories and advertisements. A linotype operator uses a keyboard somewhat similar to that of a typewriter. At each stroke a brass matrix of a letter, figure or punctuation mark drops into a groove. When there are enough in place to fill a line, molten metal is pumped against the matrices and the line of type results. As the next line is being set, the matrices of the line before are being automatically distributed.

When a compositor finishes setting his "take,"

Nineteen



MAKING UP THE FRONT PAGE

Skilled fingers swiftly marshal shining type . . . the form is locked up . . . and another front page is ready to tell the day's most important news.

Twenty

he brings the type and the corresponding copy to the makeup "bank." When a galley is full or a story is complete, the bank man takes it to the proof press, where ten proofs are pulled. Four of these go to the editors in the news room, four to New York correspondents and news syndicates, one is used for making up the pay sheets and the other goes to the proof readers.

Proof reading demands the utmost care. Not only must the proof reader see that the proof follows copy, but also he must see that the Tribune's Rules of Composition are followed and all errors corrected.

When all corrections have been made, each story is sent to the makeup tables where it is put in its proper place in a frame the size of a Tribune page. This frame is known as a "chase" and holds the type from which the matrix is made.

As soon as each page is complete, the type in the "chase" is locked up as a "form" and wheeled to the matrix room, with its page number at the head of the page.

THE MAKEUP OF NEWS

TO make certain of getting the Tribune out on time and to insure the selection of the greatest variety of interesting news for each day's issue, it has been found necessary to plan

Twenty-one



THE COMPLETED MATRIX

The stereotype matrix which is here being lifted from a form of type will reproduce exactly every letter and picture of a Tribune page. It is now ready to be sent to the stereotype foundry where several metal casts of it will be made.

Twenty-two

carefully just what is to be included. This is the job of the makeup editor.

The telegraph, cable and city editors prepare a schedule of the news on hand or in prospect each night. The advertising for each issue is sent to the composing room and a schedule is prepared of all advertising that is to appear.

These go to the night editor, who makes up a schedule for the whole paper. The composing room superintendent and he confer and decide how many pages will be needed for the day's issue. This decided, the schedule is given to the managing editor. He may decide that changes are necessary, that some stories must be shortened, others given more space. Some may be eliminated.

MAKING THE MATRIX

A MODERN newspaper is not printed from type. After the type has been set up and locked in forms, reproductions of it are made. These are semi-cylindrical plates known as stereotypes and shaped to fit on the presses. The first step in this operation is making the matrix. A matrix is a specially prepared sheet of thick, blotterlike paper which is kept in moist or plastic condition until ready for use.

One of these matrix sheets is laid upon a form of type and covered with a cork blanket and a sheet of press-board. The form is then

Twenty-three



THE MATRIX FORMER

A sheet of matrix paper is placed in this machine which dries it and shapes it to the curvature of the casting box in the autoplate machine.

Twenty-four

passed under a matrix roller at a pressure of approximately 20,000 pounds. When the matrix leaves the roller it contains an indented reproduction of every line of type, every illustration in the form from which it was made. The matrix is then removed from the form and trimmed to fit the casting box. It is then dropped down a chute to the stereotype foundry.

Constantly increasing use of color printing in the Tribune has added much new machinery to the matrix making equipment. A direct-pressure molder, using a pressure of 800 tons, was installed in August, 1934. Molding and drying matrices for color printing in one operation, this new machine insures perfect register and a uniformly smooth impression of color tints.

THE STEREOTYPE

IN the foundry the matrix is placed in a "Sta-Hi" former. Four new machines of this type have been recently installed by the Tribune. They make better "mats" and save sixty-two seconds in the making of each matrix, an important saving in an enterprise where seconds are as precious as minutes are in most other manufacturing jobs. The "former" dries and shapes the mat to the curvature of the casting box. The completed matrix is then

Twenty-five



MAKING A STEREOTYPE

In the foundry seven autoplating machines like the one illustrated above, make the metal casts used for printing the Tribune.

Twenty-six

heated and placed in the casting box of a huge autoplating machine where a stereotype plate is cast. In the machine are 16,000 pounds of molten metal kept at a temperature of 600 degrees. A pump forces the metal into every letter and character on the mat. Cold water solidifies the metal and in fifteen seconds an exact cast of the page, weighing about 55 pounds, is ejected from the machine.

The cast next is placed on a machine known as a "shaver," which planes it on the edges to give it a smooth finish so that it will fit snugly on the plate cylinder of the printing unit. The cast, its page number marked on its face, is then placed on a roller conveyor which automatically carries it to the press on which it is to be used.

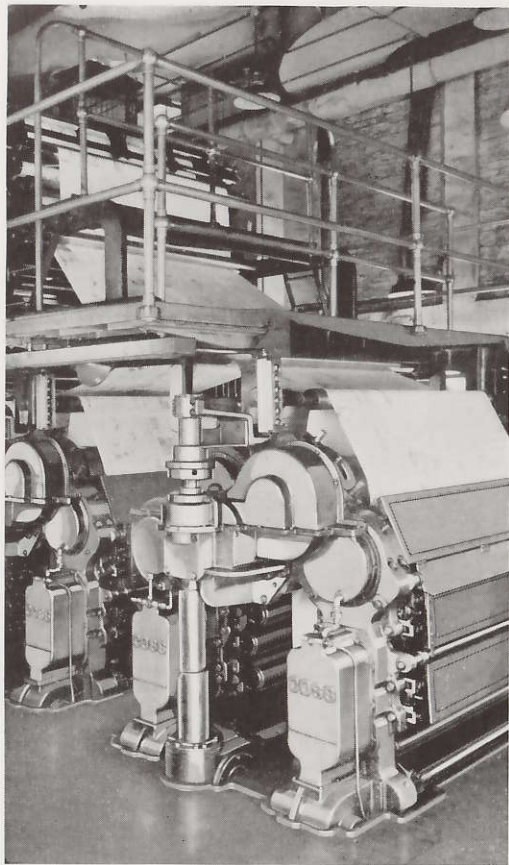
An average of sixteen casts for the daily paper and twenty for the Sunday is made from each mat. This number of casts is necessary because the same page is printed simultaneously on a number of presses, and there must be two casts for each page on each press.

After the paper is printed the casts are melted down and the metal used again.

PRESSROOM

IT is a thrilling and fascinating experience to stand in the Tribune pressroom just as the huge presses begin to get out an edition. One moment there is silence. The next a gradually

Twenty-seven



JUST BEFORE THEY START TO ROAR

A partial view of the presses whose nightly job is turning out — on a split-second schedule — more than 800,000 Tribunes.

Twenty-eight

mounting crescendo of sound, part hum, part roar, throbs throughout the building. Floods of Tribunes begin to pour from the presses—one more step in getting the news to Tribune readers has been accomplished.

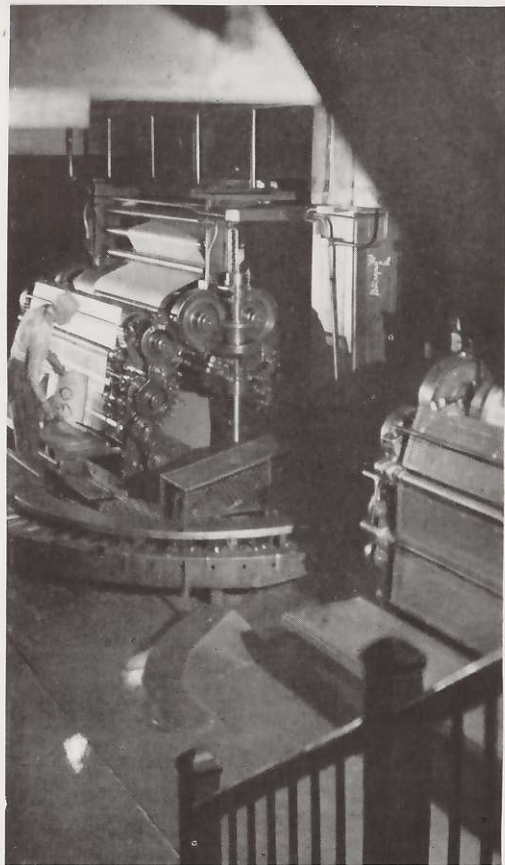
The story of these huge mechanisms is one of smoothness and efficiency. It can roughly be divided into four divisions: the reels, the printing units, the folders, and the conveyors.

The reels from which newsprint paper feeds to the presses are a novel and time-saving feature of the printing process. The older type of newspaper press must be stopped when a roll of paper is exhausted, and remain idle until a new roll is in place. But by means of these reels a new roll of paper can be put in place without any loss of time.

There are eighty-eight of these reels—one directly underneath each printing unit. Each reel holds three rolls of paper, only one of which is feeding into the press at any one time.

When a roll is almost exhausted the press is slowed down and the reel is gradually revolved to bring the side of the new roll in contact with the sheet of paper feeding into the press. The paper of the new roll has first been smeared with glue so as to catch the old sheet. A few papers are spoiled but these are thrown out at the folder. As the new roll takes hold the old sheet of paper is cut, the core of the used roll taken out and a new roll put in its place.

Twenty-nine



PAGE 30 GOES TO BED

A corner of the huge Tribune pressroom just before the final edition begins its journey to hundreds of thousands of readers. The page number can be seen plainly marked on the cast.

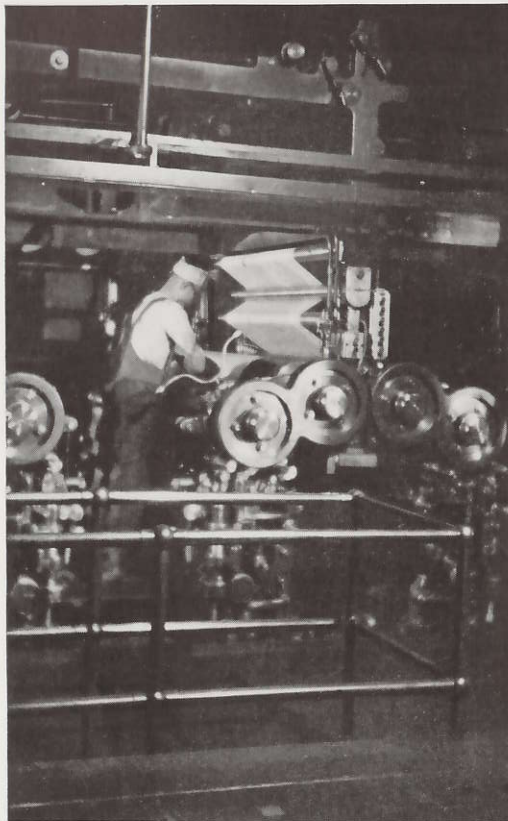
Thirty

There are eighty-eight news printing units in the Tribune pressroom. Twelve of these units are equipped to print high-speed color. They enable the Tribune to print four four-color pages in any issue. Each unit prints four pages on each side of the web of paper. On one cylinder, called a plate cylinder, the curved plates made by the stereotypers are clamped. Running in contact with this cylinder are ink rollers which feed ink to the type surfaces of the plates. Another cylinder, called the impression cylinder, presses the paper firmly against the type.

One of the model features of the Tribune presses is their flexibility. Any number of printing units can be linked together to feed into one folding machine, so that any size paper from eight to sixty-four pages can be printed. For example, for a forty-page paper five units would be used, with the five webs of paper all feeding into one double folding machine. A combination of seven of the new high speed press units recently installed by the Tribune can print 50,000 fifty-six page papers in an hour.

Above each of the eighteen folding machines is a former, over which the web of paper is led and delivered to the folding cylinder. This operation gives the paper the fold at the center of the sheet from top to bottom. It is then delivered to the folding and cutting cylinders,

Thirty-one



REPLATE!

Important, last minute news comes in . . . new casts carrying this news are locked on the printing cylinders . . . seconds later papers containing the story are pouring off the presses.

Thirty-two

where the sheet is cut and the fold is made from side to side. This operation completes the paper, and it is dropped from the folder into the delivery to be carried up to the mailing room. At each delivery there is an ingenious device by which every fiftieth paper is offset from the rest to enable the papers to be taken from the delivery in bundles of fifty each.

The rows of conveyors which carry the papers in a winding, serpentine stream from the folding machines up through the ceiling into the mailing room are an interesting spectacle. Each conveyor consists of spiral-wound, wire spring cables facing each other and running over pullys. The pressure of these cables against each other holds the papers firmly between them and carries them swiftly upward in a never-ending stream.

Each news press unit in the Tribune plant weighs 30 tons. The entire battery of 88 units weighs 2640 tons! Each of the 88 paper reels weighs 2 tons without paper. The paper rolls weigh about 1,700 pounds each. Each pair of double folders weighs 25 tons.

In addition to the 88 news press units, the Pressroom also contains the "Comics" press, consisting of 12 printing units and one folder. It prints the four-color, 12-page comics section of the Sunday Tribune.

Thirty-three



ALL READY TO MAIL!

This machine folds, wraps and addresses Tribunes destined for individual subscribers living outside of Chicago.

Thirty-four

THE MAILING ROOM

FROM the pressroom printed and folded Tribunes flow in an apparently endless stream into the mailing room. Here the race against time reaches a climax. Hundreds of thousands of newspapers must be distributed to readers within a few hours. Because of the excellent system the Tribune uses, and the extensive employment of ingenious machines, this herculean task is performed smoothly and efficiently.

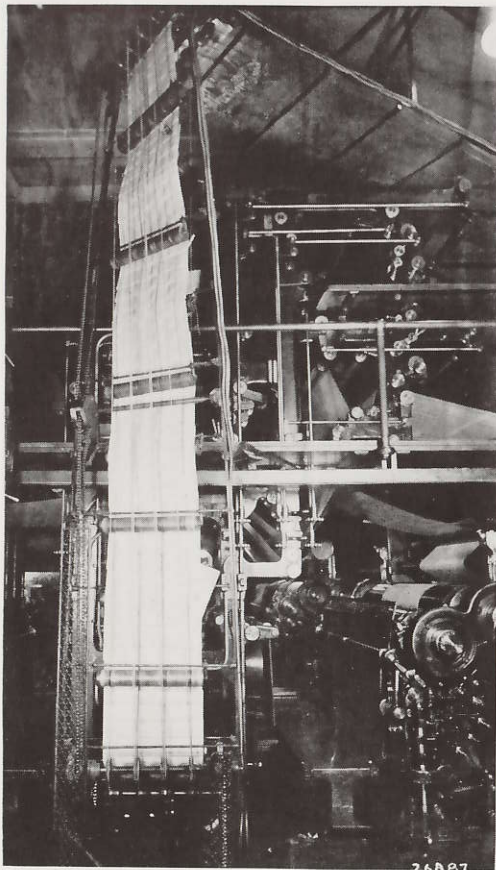
Tribune circulation is divided into two divisions, City and Suburban, and Country. Country circulation is again divided into papers delivered in bulk to dealers out of town and those mailed direct to subscribers.

Tribunes destined for out of town dealers are wrapped in bundles according to quantities ordered, and tied with wire at the rate of 54 bundles a minutes. These are securely wrapped, as they sometimes must be dropped from express trains speeding at sixty miles an hour.

Tribunes mailed to subscribers fall into two classes. Where there is only one subscriber in a town, the papers are sent through a machine which folds, addresses and drops them in a mail bag. Papers for subscribers along a certain rail-way route are all placed in one bag.

The same type of machine handles papers going to towns where there is more than one

Thirty-five



UP FROM THE PRESSES!

Conveyors carry papers in a serpentine stream from the folding machines up through the ceiling into the mailing room.

Thirty-six

Tribune subscriber. This machine prints the names and addresses of subscribers on Tribunes at the rate of 12,000 an hour. The stencils for each route are together and the last one for each town on the route makes a red mark on the paper in addition to the address. As this red mark appears, the papers in that group are rolled in wrappers and dropped into a mail sack.

All towns along a given railway route are grouped together. At the end of each train separation, the bag containing mail for that route is closed, sent on its way and another takes its place.

All this work is done on long tables under which moving belt conveyors converge to a central distributing point in the southwest corner of the mailing room. Here several chutes lead to the waiting trucks at the loading platform below.

Each bundle or mail bag carries a bright colored tag which tells the man at the chutes the railroad station to which it is to go. He pushes it down the proper chute, it is loaded on a truck and is on the way to its destination.

Papers going to subscribers in Chicago and suburbs and those to be sold at newsstands are handled by Official Tribune Carriers. These men buy their papers at wholesale rates and sell them to individuals at retail. They are carefully selected and must conform to the Trib-

Thirty-seven



2½ TONS OF PAPER

Reaching into the holds of Tribune boats moored alongside the warehouse, the steel fingers of electric cranes come up clutching three 1,700-pound rolls of newsprint.

Thirty-eight

une's delivery rules or else no more Tribunes will be sold to them.

These carriers have standing orders for so many papers each morning. The number they order is bundled the same as for out of town dealers and delivered to the trucks in the same manner.

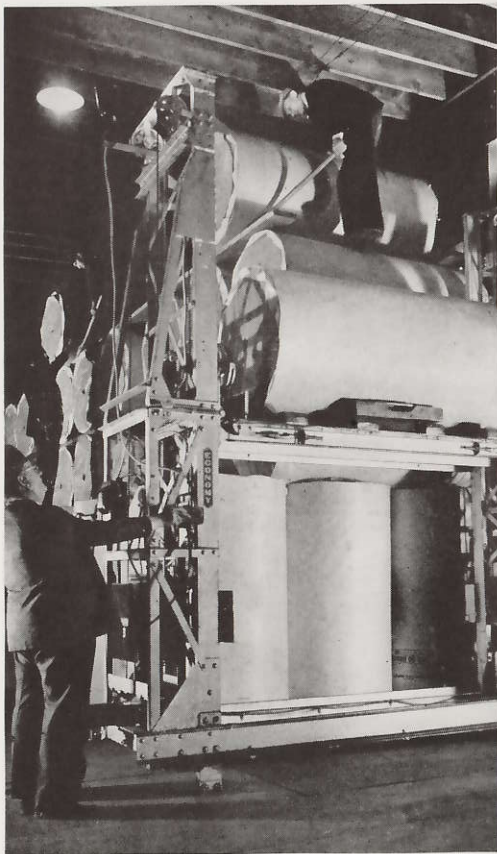
The Tribune employs 120 full-time men in the mailing room, also about 80 extras who work part time on the Sunday editions. The room occupies over 30,000 square feet of floor space. More than 100,000 pounds of rope and 300,000 pounds of wire are used every year to tie the bundles of newspapers, and close to a third of a million pounds of wrapping paper.

TIMBERLANDS AND PAPER MAKING

YOU have stood in the vast Tribune press-room and watched the hungry presses transform mile after mile of white paper into completed Tribunes.

The making of Tribune newsprint from logs that come from far northern woods is a complete and dramatic story in itself. The story begins in the snow-bound timberlands of Quebec bordering the north shore of the Gulf of St. Lawrence, where the Tribune holds in excess of 3,000 square miles of virgin forest.

Thirty-nine



PAPER TIERING MACHINE

This mobile, electrically operated hoist is one of many modern devices which enable the Tribune to unload and store a shipload of newsprint in a few hours' time.

Forty

Here the spruce and balsam trees from which paper is made are felled in the dead of winter. They are cut into four-foot logs and hauled to the banks of the rivers to await spring thaws.

When the ice has melted, millions of logs are floated downstream to the towns built by the Tribune on the coast.

The logs are dumped from a conveyor into the steamers. These ships, built to Tribune specifications, are capable of holding enormous loads. Logs pour into the boat for thirty hours until, finally, the hold is full, the deck loaded and the logs are ready for their long trip up the St. Lawrence to the paper mill.

The Tribune has its own paper mill on the Welland Canal at Thorold, Ontario. As soon as a steamer arrives at the mill, derricks lift logs from its hold and dump them into a pond. A chain conveyor builds them into mountainous piles containing 30,000 to 40,000 cords of wood each. They are now ready to be made into paper.

Newsprint used by the Tribune is made up of approximately 75 per cent mechanical wood pulp and 25 per cent sulphite pulp. The former is made by forcing the logs under pneumatic pressure against huge grindstones. Water flows over them all the time, and from the bottom of the machine comes a steady stream of pulp. Slivers and resinous materials are re-

Forty-one

moved, fresh water is added and the pulp is ready to go to the mixing tanks, where sulphite pulp is added to it.

Mechanical pulp is necessary to give the paper the porouslike characteristics which enable it to absorb ink on the high speed presses. Sulphite pulp gives the paper strength and flexibility. Sulphite pulp is made in steel cylinders lined with brick, about the height of a three-story house. These are called digesters. They are filled with wood chips and as much bisulphite of soda as the digester will hold is added. It is then sealed, live steam is forced in and the mixture is cooked under pressure for eight hours. At the end of that time the whole mass is blown out into a huge vat where it is washed with water for hours. It is then ready to be mixed with mechanical pulp and made into newsprint.

In the mixing tanks, the mechanical and sulphite pulps are mixed with various chemicals which impart brightness to the paper in its finished form. Since the spring of 1933, rhodamin, a fluorescent liquid, has been added to the ingredients used in the mixture tanks. This is done to produce the pinkish shade of white which makes Tribune newsprint such an excellent background for type and illustrations. These ingredients are all beaten together, water is added, and the mixture is pumped into boxes

the width of the paper machine. From these it overflows onto the Fourdrinier wire screen, on which it is almost instantly converted into paper. This screen is in the form of an endless belt. The pulp passes over it, the water drains off and the forward motion of the machine causes the pulp fibers to interlace and become paper. When the paper leaves the screen it passes over a series of suction boxes which extract still more water. It then goes through a set of rolls which squeeze and dry it further. From these it passes through 32 drying cylinders filled with live steam and covered with blankets to absorb the moisture.

The final touch to the paper is given by steel calender rolls which polish the paper and give it a smoother finish. It is then rewound and wrapped in extra heavy paper made at the mill from the coarser fibers screened from the newsprint pulp. In rolls of approximately 1,700 pounds each, the paper is then loaded on the Tribune's motorship, the 3,000-ton "Chicago Tribune," or on other boats of the Tribune's extensive fleet. Arriving at Chicago the paper is unloaded at the Tribune's huge warehouses near the mouth of the Chicago river.

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